

**Missouri Department of Natural Resources
Water Pollution Control Program
Total Maximum Daily Loads (TMDLs)**

for

**Davis Creek
Lafayette County, Missouri**

**Completed December 26, 2000
Approved January 31, 2001**

**Two Phased Total Maximum Daily Loads (TMDLs)
For Davis Creek
Pollutants: Biochemical Oxygen Demand (BOD) and Ammonia (NH₃N)**

Name: Davis Creek

Location: Near Odessa in Lafayette County, Missouri

Hydrologic Unit Code (HUC): 10300104-060001

Water Body Identification (WBID): 0912

Missouri Stream Class: The impaired segment of Davis Creek is a Class C stream¹

Beneficial Uses: Livestock and Wildlife Watering, Protection of Warm Water Aquatic Life and Human Health--Fish Consumption

Size of Impaired Segment: 2 miles

Location of Impaired Segment: N 1/2 Section 9, Township 48 N, Range 27 W to SE 1/4 Section 10, Township 48 N, Range 27 W

Pollutants: BOD (Biochemical Oxygen Demand) and Ammonia

Pollutant Source: Odessa Municipal Wastewater Treatment Facility—Southeast Lagoon

Permit Number: NPDES Permit No. MO-0026387

TMDL Priority Ranking: High

1. Background and Water Quality Problems

Davis Creek is on the 1998 303(d) list due to high BOD (which causes low dissolved oxygen) and high ammonia resulting from discharges from the Odessa Southeast Lagoon System. The TMDL priority ranking for Davis Creek is high. During dry weather the stream flow in Davis Creek is effluent dominated. For this reason this TMDL was calculated at critical low flow conditions (7Q10).

At the request of the Water Pollution Control Program (WPCP), the Environmental Services Program (ESP) conducted two stream surveys of Davis Creek near Odessa,

¹ Class C streams may cease flow in dry periods but maintain permanent pools, which support aquatic life. See 10 CSR 20-7.031(1)(F)

Missouri, in Lafayette County during July 15-17, 1997, and again July 8-9, 1998, as part of a wasteload allocation study. The purpose of the surveys was to quantify pollutant loading from the Odessa Southeast Lagoon System during minimal summer flows. Davis Creek at the point of discharge is a class C stream. There are no other point source discharges to Davis Creek above the impaired segment.

The Odessa Southeast Lagoon System (OSLS) consists of a three cell lagoon with a facility design flow of 0.58 cubic feet per second (cfs). This translates to 375,000 gallons/day with a design population equivalent of 3,575. The facility discharges wastewater to a tributary to Davis Creek, and the outfall is located approximately 50 yards up the tributary from Davis Creek. Davis Creek then flows easterly through southern Lafayette County into the Blackwater River. The OSLS has been in noncompliance in the past. No monitoring records were sent in to Missouri Department of Natural Resources (MDNR) from December 1992 to May 1994. In 1997 the OSLS was cited for being in noncompliance due to exceedences in Total Suspended Solids (TSS) and BOD. As of the writing of this TMDL, however, the OSLS is in compliance.

Land use within this area according to the Lafayette County Natural Resources Conservation Service (NRCS) is mostly row crop with some pasture and forested areas. In the six areas sampled, the stream is moderately to mostly channelized, with partial to little tree canopy present. In two sample locations, erosion from livestock access and vehicle use was noted.

Livestock access in Davis Creek was noted at station #4 in the 1997 and 1998 studies. Nonpoint source impacts were estimated and were not considered to be significant at this time. A discussion of how the estimates were arrived at is located in Section #4, Load Allocation (Nonpoint Source Load).

Possible vehicle use in the stream was noted at station #5 in the 1997 study. The purpose for this traffic was unknown, but could be linked to moving cattle across the stream to other pastures, moving farming equipment between farm fields or recreational use.

Since wastewater discharges of this size are known to cause water quality problems in Class C streams, water quality investigation of Davis Creek was conducted in both 1997 and 1998. This investigation confirmed that the discharge from the OSLS was responsible for depressed levels of dissolved oxygen in Davis Creek and exceedence of Missouri Water Quality Standards for ammonia. In the 1998 study, DO analysis results taken in the field included: 5.3 milligrams per Liter (mg/L) taken at 5:40 am; 5.2 mg/L taken at 6:07 a.m.; 9.0 mg/L taken at 1:10 p.m. and 4.8 mg/L at 12:45 p.m. The selection of pH 7.8 su and the corresponding temperatures for the ammonia criteria were chosen to reflect typical seasonal conditions present (summer conditions).

State standards (10 CSR 20-7.031 at (4)5.B.I) provides maximum size of mixing zones for flows between zero and 0.1 cubic feet per second (cfs). During dry weather conditions there is no flow in Davis Creek above the Odessa Southeast Lagoons and the 7Q10 is considered zero. The July 15-17, 1997, survey reports that "The OSLS effluent

discharge was the only noted source of flow into Davis Creek.”² The mixing zone for Davis Creek comprises the width of the stream for one quarter of a mile downstream, as outlined in state standards, as noted above. Standards are applied at the end of the mixing zone. An upstream flow of 0.01 cfs was used in the model to reflect the fact that flow is negligible during low flow conditions. A value of 0.4 cfs was chosen to reflect upstream flow conditions in the winter months.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Targets

Designated Uses

The designated uses of Davis Creek, WBID 0912, are Livestock and Wildlife Watering and Protection of Warm Water Aquatic Life and Human Health--Fish Consumption. The stream classifications and designated uses may be found at 10 CSR 20-7.031(1) C and table H.

Anti-degradation Policy

Missouri’s Water Quality Standards include the EPA “three-tiered” approach to anti-degradation, and may be found at 10 CSR 20-7.031(2).

Tier I defines baseline conditions for all waters—it requires that existing beneficial uses are protected. TMDLs would normally be based on this tier, assuring that numeric criteria (such as dissolved oxygen, ammonia) are met to protect uses.

Tier II requires no degradation of high-quality waters, unless limited lowering of quality is shown to be necessary for “economic and social development.” A clear implementation policy for this tier has not been developed, although if sufficient data on high-quality waters are available, TMDLs could be based on maintaining existing conditions, rather than the minimal Tier I criteria.

Tier III (the most stringent tier) applies to waters designated in the state’s standards as outstanding state and national resource waters; Tier III requires no degradation under any conditions. Management may require no discharge or prohibition of certain polluting activities. TMDLs would need to assure no measurable increase in pollutant loading.

These TMDLs will result in the protection of existing beneficial uses, which conform to Missouri’s Tier I anti-degradation policy.

² Stream Survey Sampling Report, Odessa SE Lagoon System and Davis Creek Survey, Missouri Department of Natural Resources, July 15-17, 1997, Page 5

Specific Criteria

Ammonia

The specific criteria, found in the state's standards at 10 CSR 20-7.031(4), apply to all classified waters. The specific criteria for the ammonia TMDL are found in 10 CSR 20-7.031 Table B. These limits are pH and water temperature dependent. Seasonal ammonia limits at the typical seasonal pH and water temperature values are given in the tables below.

BOD

Dissolved oxygen (DO) is the water quality standard that is exceeded in Davis Creek. DO is not a pollutant and cannot be allocated in a TMDL. BOD is the parameter used to determine the impact that wastewater will cause on DO levels in a receiving stream. There is no numeric criterion in the WQS for BOD. Since DO cannot be allocated, DO is linked to BOD. BOD is a pollutant that is measurable and may be allocated in a TMDL.

BOD is composed of carbonaceous oxygen demand (CBOD) and nitrogenous oxygen demand (NBOD). NBOD can be estimated directly from ammonia nitrogen (NH₃). Given the amount of ammonia allowed in this TMDL, NBOD should be approximately 5 mg/L and BOD 7 mg/L. The numeric link between dissolved oxygen and BOD is generated by the water quality model QUAL2E, and is supported by United States Environmental Protection Agency (USEPA). The QUAL2E model calculates BOD by using CBOD and ammonia data from actual sample analyses. State Water Quality Standards for all Missouri streams except cold water fisheries call for maintenance of 5 mg/L dissolved oxygen³ or the normal background level of dissolved oxygen, whichever is lower.⁴

Summary of Numeric Instream Criteria:

Table 1 summarizes the instream numeric criteria from the Missouri Water Quality Standards for the two TMDLs on Davis Creek. A pH of 7.8 su and temperatures of either 26° C for summer or 6° C for winter were chosen to reflect typical conditions for this watershed.

³ 10 CSR 20-7.031(4)(J)

⁴ 10 CSR 20-7.031(4)(A)(3)

Table 1: Instream Criteria for Odessa Southeast Lagoon System

	<i>Beyond Mixing Zone</i>
<i>Dissolved Oxygen (mg/L) May-October</i>	5.0
<i>Dissolved Oxygen (mg/L) November-April</i>	5.0
<i>Ammonia (mg/L), May-October (pH 7.8, Temperature 26° C)</i>	2.0
<i>Ammonia (mg/L), November-April (pH 7.8, Temperature 6° C)</i>	3.3

3. Calculation of Load Capacity

Load capacity is defined as the maximum pollutant load that will still attain water quality standards. It is calculated as follows:

(design stream flow in cfs)(instream pollutant concentration in mg/L)(5.395) (End of Pipe Load) + (upstream water quality in mg/L)(upstream design flow in cfs)(5.395) = lbs/day (Load allocation)*

*5.395 is the constant used to convert mg/L to pounds/day.

CBOD

Summer:

$(0.58 \text{ cfs} \times 2 \text{ mg/L} \times 5.395 = 6.26 \text{ lb/day}) + (0.01 \text{ cfs} \times 3.5 \text{ mg/L} \times 5.395 = 0.189 \text{ lb/day}) = 6.45 \text{ lb/day}$

Winter:

$(0.58 \text{ cfs} \times 45 \text{ mg/L} \times 5.395 = 140.1 \text{ lb/day}) + (0.4 \text{ cfs} \times 1.8 \text{ mg/L} \times 5.395 = 3.88) = 143.98 \text{ lb/day}$

Ammonia

Summer:

$(2 \text{ mg/L} \times 0.58 \text{ cfs} \times 5.395 = 6.26 \text{ lb/day}) + (0.17 \text{ mg/L} \times 0.01 \text{ cfs} \times 5.395 = 0.009 \text{ lb/day}) = 6.27 \text{ lb/day}$

Winter:

$(3.3 \text{ mg/L} \times 0.58 \text{ cfs} \times 5.395 = 10.33 \text{ lb/day}) + (0.045 \text{ mg/L} \times 0.4 \text{ cfs} \times 5.395 = 0.097) = 10.43 \text{ lb/day}$

Model Assumptions and Predictions

These waterbody segments were modeled using the QUAL2E model. The first step was to calibrate the hydraulic portion of the model. MDNR Stream Sampling Surveys were

conducted July 15-17, 1997, and July 8-9, 1998, as a part of a wasteload allocation study. During these two studies, stream measurements were taken, observations made and samples collected. From these measurements a hydraulic model was constructed and calibrated. The calibrated model was used to predict water quality conditions in Davis Creek.

Based on the QUAL2E model, the end of pipe effluent quality for 303(d) Pollutants that will just meet Water Quality Standards are as follows:

<u>Summer</u>	<u>Winter</u>
Ammonia = 2.0 mg/L	3.3 mg/L
CBOD = 2.0 mg/L	45 mg/L

These figures are from the model. They were chosen because they are the amounts that will allow Davis Creek attain a Water Quality Standard target of 5 mg/L of Dissolved Oxygen but do not reflect a margin of safety.

4. Load Allocation (Nonpoint Source Load)

(7Q10 stream low flow in cfs)(background instream pollutant concentration at the 7Q10 low flow in mg/L)(5.395) = pollutant load in lbs/day

The upstream design flow amounts of 0.01 for summer and 0.4 for winter were taken from collected data.

CBOD

Summer:

$$(0.01 \text{ cfs} * 3.5 \text{ mg/L} * 5.395) = 0.189 \text{ lb/day}$$

Winter:

$$(0.4 \text{ cfs} * 1.8 \text{ mg/L} * 5.395) = 3.88 \text{ lb/day}$$

Ammonia

Summer:

$$(0.01 \text{ cfs} * 0.17 \text{ mg/L} * 5.395) = 0.009 \text{ lb/day}$$

Winter:

$$(0.4 \text{ cfs} * 0.045 \text{ mg/L} * 5.395) = 0.097 \text{ lb/day}$$

Nonpoint source loads are those other than point source loads and in this instance represent the amount of pollutants flowing through the portion of Davis Creek just upstream of the impaired section. These loads are calculated by using formula three (above). The figures chosen to reflect summer and winter nonpoint source loads shown in the Summary of Loads table on page 7 including existing and future nonpoint source loads and natural background.

Evidence of livestock impacts in the creek was noted at station #4. While there is no data, nonpoint source loads due to livestock impacts were estimated using information

from the Missouri Agricultural Statistics Service Web Site. From the Web Site the total amount of cattle for the county was found. The drainage area for Davis Creek was delineated from United States Geological Survey topographical maps. The Davis Creek watershed above the impaired segment was estimated to be 2% of the county. Two percent of the total number of cattle found in the county is approximately 1000 cattle. This figure was confirmed by the Lafayette County NRCS personnel as being realistic. A TMDL from the state of Georgia states that it was estimated that 12% of cattle with access into streams would defecate in the stream, according to their NRCS and USEPA staff.⁵ Out of an estimated 1000 cattle in the watershed with access to the stream, approximately 120 will defecate in this stream. MDNR staff considered this amount of cattle in a watershed the size of Davis Creek (approximately 9,000 acres) to not be significant at this time, however, since this is a phased TMDL, further study will determine what nonpoint source impacts from livestock exist.

5. Waste Load Allocation (Point Source Loads)

The Odessa Southeast Lagoon is the only point source load discharging to or impacting the impaired segment of Davis Creek. The procedures used in this TMDL are identical to those that would be used by the permit writers. For point source loads, see table below.

Summary of Loads

The load allocations for these TMDLs are summarized in the table below:

Loads to Davis Creek near Odessa, Missouri (pounds/day)

		Point Load (WLA)	Non-point Load (LA)	Margin of Safety (MOS)	Load Capacity
Summer	Ammonia	5.63	0.01	0.63	6.27
	CBOD	5.62	0.19	0.64	6.45
Winter	Ammonia	9.29	0.10	1.04	10.43
	CBOD	125.7	3.88	14.4	143.98

6. Margin of Safety

Due to inherent inaccuracies in the QUAL2E, the modeler suggests a margin of safety equal to 10% of the load capacity:

Ammonia: 0.63 and 1.04 pounds per day in summer and winter respectively.

CBOD: 0.64 and 14.4 pounds per day in summer and winter respectively.

⁵“ Draft Total Maximum Daily Load Evaluation of Fecal Coliform for Little Brushy Creek Suwannee River Basin,” Georgia, from personal communication with NRCS and USEPA staff, page 6.

7. Seasonal Variation

Seasonal variation was simulated in the QUAL2E model via the use of lower water temperatures, lower ammonia and CBOD decay coefficients and adjustments to seasonal low flow values. Seasonal limits for BOD and ammonia are necessary because decay of these substances is biologically mediated and varies with water temperature and because dissolved oxygen gas saturation varies with water temperature.

8. Monitoring Plan For TMDLs Developed Under the Phased Approach

Present permit requirements include a monthly flow sample (24-hour estimate), monthly BOD grab sample, monthly Total Suspended Solids grab sample and monthly pH grab sample. BOD is limited to a weekly average of 65 mg/L and monthly average of 45 mg/L. TSS is limited to a weekly average of 120 mg/L and a monthly average of 80 mg/L. Ambient monitoring performed by OSLS personnel upstream and downstream of the outfall is planned to be added to the permit to collect information on upstream water quality.

Based on MDNR information⁶ and a conversation with the consultant,⁷ the city of Odessa has hired an engineering firm to prepare a facility plan. The engineer will review the existing wastewater system, identify any problems and prepare a list of alternatives to address the problems. Existing and future population changes and the residential, commercial and industrial base will be taken into account and costs will be identified. Furthermore, the consultant reported the city is discussing closing their lagoons on other streams and solely using the Davis Creek site for their wastewater treatment. This would necessitate building a mechanical treatment plant. The present permit is scheduled to expire May 22, 2002.

As this is a phased TMDL, the first phase will entail revision of the Odessa Municipal WWTF permit to include limits that are protective of state water quality standards. The first phase will also include further assessment of the possible nonpoint source contributions to this waterbody.

9. Implementation Plans

Implementation will be accomplished through permit action. An implementation plan upgrading the permit will include an alternative made below agreed to by the stakeholders. Once the permit is reopened, the OSLS will have three years to comply with the permit revisions. Monitoring will be done on a regular basis to assure compliance with Missouri Water Quality Standards. These two TMDLs will be incorporated into Missouri's Water Quality Management Plan.

Since this is a phased TMDL, more water quality data will be gathered and a suitable model developed that would handle both point and nonpoint source pollution.

⁶ E-mail correspondence, Doug Garrett, Missouri Department of Natural Resources, 9/18/00.

⁷ Phone conversation with Eugene Spears, Allgeier, Martin & Associates, Inc., Joplin, MO, 11/13/00.

A limit for ammonia in the Odessa Southeast Lagoon NPDES permit will be added. Effluent limits for nitrogen and phosphorus may be required in the future.

Alternatives:

In order to maintain a DO in Davis Creek of 5.0 mg/L, which is the Water Quality Standard, modeling indicates a CBOD of 2.0 mg/L would be needed to arrive at the required BOD permit limit in summer. This would be very difficult for OSLS to achieve given the limitations of their lagoon system. Other alternatives should be considered.

For summer discharge, a minimum effluent DO concentration of 8 to 10 mg/L will have to be maintained. In this case it is anticipated that a monthly average summer BOD effluent limit of 10 mg/L (5 mg/L CBOD + approximately 5 mg/L NBOD represented by the allowable 2 mg/L ammonia) will be necessary. This alternative requires building a mechanical plant.

Aeration methods to consider may include an aerated outfall, aeration using compressed air (this would require electricity to run and may not be feasible in that location) or construction of a airstair structure to mix oxygen into the effluent.

Another option would be a no-discharge system during the summer (low flow season). This alternative would require building a reservoir to store sewage.

Land application is another alternative to consider.

10. Reasonable Assurances

MDNR has the authority to write and enforce NPDES permits. Inclusion of effluent limits, determined from the allocations and established in this TMDL, into a state NPDES permit should provide reasonable assurance that instream water quality standards will be met.

11. Public Participation

This water quality limited segment is included on the approved 1998 303(d) list for Missouri. MDNR developed these TMDLs. Six public meetings to allow input from the public on impaired waters were held between August 18 and September 22, 1999. No comments pertaining to Davis Creek were received during the public meetings. This TMDL document was sent to EPA for examination and then the edited draft placed on public notice. A public notice period from December 8, 2000 to January 7, 2001, was held. Groups receiving the public notice announcement include the Missouri Clean Water Commission, the affected facility, the Water Quality Coordinating Committee, the TMDL Advisory Committee, Stream Team volunteers in the watershed, and the others that routinely receives the public notice of NPDES permits. Copies of the notice, the comments and MDNR's response to the comments are on file with MDNR.

12. Administrative Record and Supporting Documentation:

An administrative record on the Davis Creek TMDL has been assembled and is being kept on file with the Missouri Department of Natural Resources, including the following:

Land use map

Topographical map of impaired segment with Sampling Station Number
Data

Documents on file with MDNR:

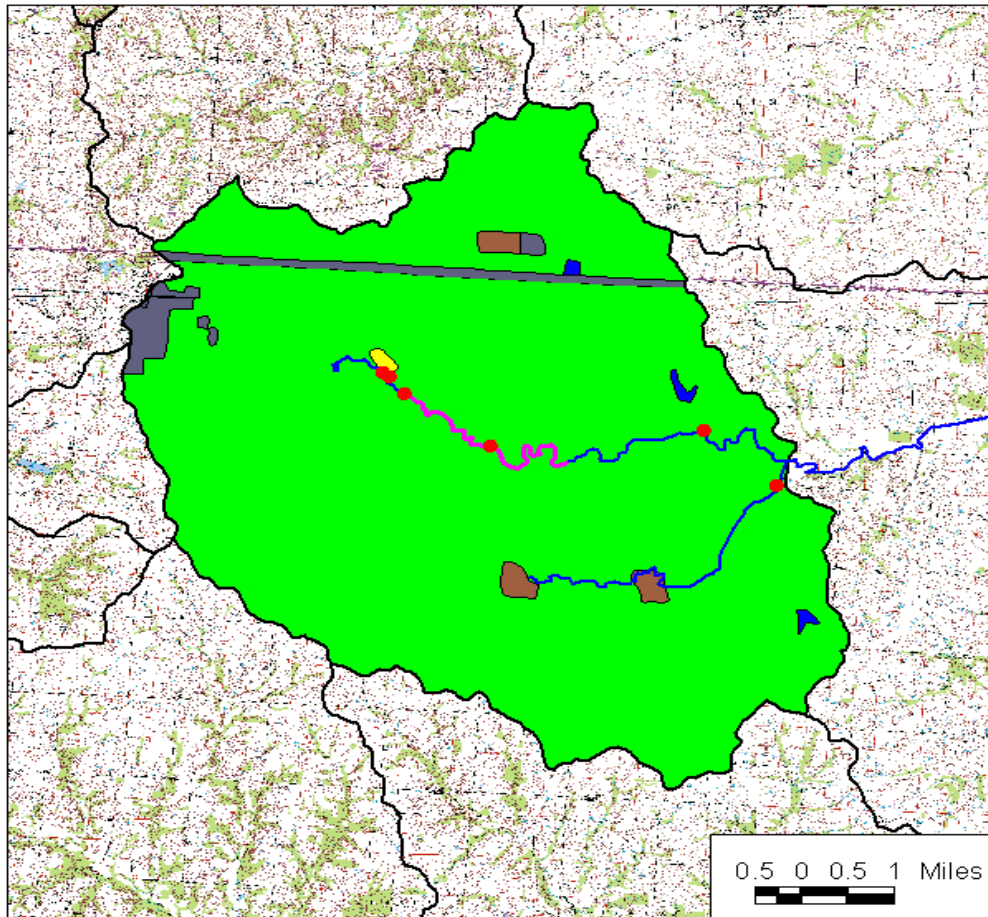
Input and output documents

Permit for OSLS

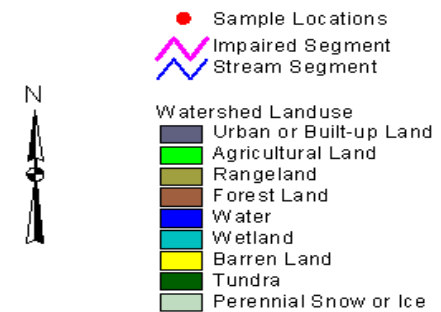
Public notice announcement

Fact Sheet

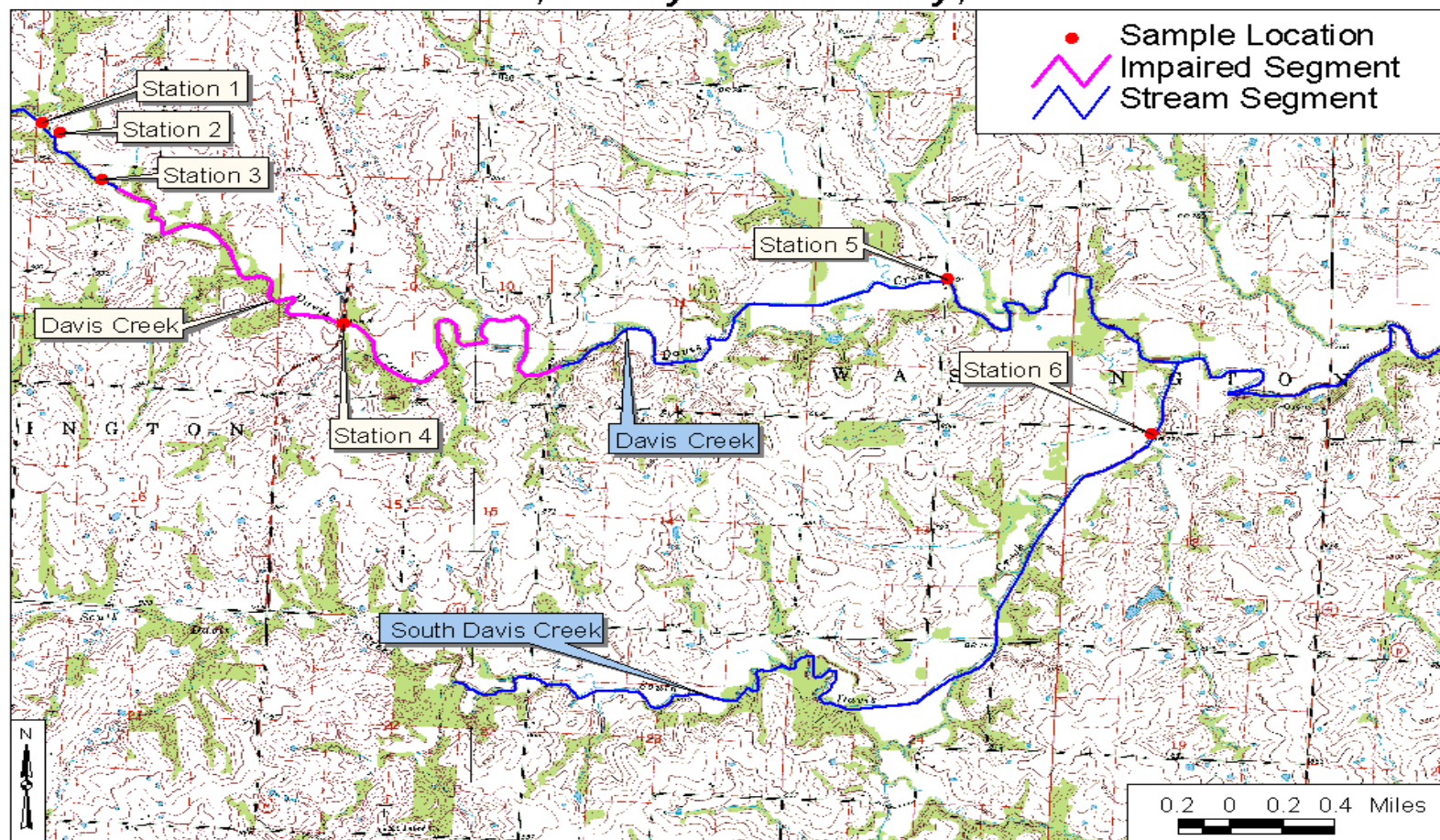
Land Use Types for Davis Creek Watershed (10300104-060001)



Land Use Type		Area (acres)
Urban or Built-up Land	Residential	301
	Commercial and Services	50
	Trans, Comm, Util	395
		746
Agricultural Land	Cropland and Pasture	25701
		25701
Forest Land	Deciduous Forest Land	237
		237
Water	Reservoirs	72
		72
Barren Land	Transitional Areas	38
		38



Map of Sample Locations and Impaired Stream Segment Davis Creek, Lafayette County, Missouri



DAVIS CREEK DATA

DATE	STATION	TIME	FLOW	WATER TEMP	DO	pH	NO3	NH4	CBOD
7/16/1997	1.00	546		24	4.00	8.00	0.06	0.07	<4
7/16/1997	1.00	1232		26	5.00	8.00	<0.04	0.06	<2
7/16/1997	2.00	530		28	5.00	9.00			
7/16/1997	2.00	1210		29	6.00	6.00	<0.04	0.04	17
7/16/1997	3.00	614		23	0.00	8.00	0.16	0.54	16
7/16/1997	3.00	1306		29	5.00	8.00	0.29	0.49	9
7/16/1997	4.00	645		23	2.00	7.00	0.31	1.22	<4
7/16/1997	4.00	1320		29	6.00	8.00	0.32	1.11	<4
7/16/1997	5.00	555		25	5.00	8.00	0.05	0.04	<2
7/16/1997	5.00	1240		30	9.00	8.00	0.04	0.02	<4
7/16/1997	6.00	525		24	5.00	8.00	<0.04	0.02	<2
7/16/1997	6.00	1215		26	6.00	8.00	<0.04	0.01	<2
7/17/1997	1.00	544		25	4.00	8.00	0.05	0.08	<4
7/17/1997	1.00	1223		27	5.00	8.00	<0.04	0.08	<2
7/17/1997	2.00	530		28	5.00	9.00			
7/17/1997	2.00	1205		30	8.00	10.00	<0.04	0.03	17
7/17/1997	3.00	607		24	0.00	8.00	0.19	0.86	12
7/17/1997	3.00	1246		29	4.00	8.00	0.24	0.66	9
7/17/1997	4.00	625		24	0.00	7.00	0.40	1.02	<4
7/17/1997	4.00	1320		31	7.00	8.00	0.39	0.86	<4
7/17/1997	5.00	550		25	5.00	8.00	<0.04	0.05	<4
7/17/1997	5.00	1250		32	9.00	8.00	<0.04	0.04	<2
7/17/1997	6.00	520		25	5.00	7.00	<0.04	0.03	<2
7/17/1997	6.00	1225		28	6.00	9.00	<0.04	<0.01	<2
7/8/1998	1.00	547	0.02	25	4.00	8.00	0.46	0.81	4
7/8/1998	1.00	555	0.02	26	4.00	8.00	0.20	0.07	4
7/8/1998	1.00	1330	0.02	31	10.00	9.00	0.27	0.01	4
7/8/1998	2.00	540	0.40						
7/8/1998	2.00	1310	0.40	33	9.00	9.00	0.12	0.39	21
7/8/1998	3.00	610	0.84	26	0.00	8.00	0.13	1.42	21
7/8/1998	3.00	1255	0.84	30	4.00	8.00	0.19	1.86	14
7/8/1998	4.00	625	1.48	26	2.00	7.00	0.38	1.63	4
7/8/1998	4.00	1335	1.48	30	5.00	8.00	0.34	1.7	5
7/8/1998	5.00	555	0.91	26	5.00	8.00	1.08	0.05	4
7/8/1998	5.00	1310	0.91	31	11.00	8.00	0.96	0.02	4
7/8/1998	6.00	525	0.63	27	8.00	7.00	0.58	0.01	2
7/8/1998	6.00	1245	0.63	28	10.00	8.00	0.46	0.01	2
7/9/1998	1.00	1310	0.02	28	8.00	8.00	0.16	0.01	4
7/9/1998	2.00	607	0.40	32	7.00	9.00	0.10	0.595	21.5
7/9/1998	2.00	1245	0.40	30	5.00	8.00	0.07	0.8	22
7/9/1998	3.00	530	0.84	27	0.00	8.00	0.11	1.9	23
7/9/1998	3.00	1325	0.84	30	3.00	8.00	0.17	2.15	14

7/9/1998	4.00	620	1.48	26	2.00	8.00	0.27	1.92	4
7/9/1998	4.00	1340	1.48	28	4.00	8.00	0.24	2.02	6
7/9/1998	5.00	555	0.91	26	5.00	8.00	0.86	0.04	4
7/9/1998	5.00	1315	0.91	29	12.00	8.00	0.80	0.03	2
7/9/1998	6.00	530	0.63	26	9.00	8.00	0.35	0.01	2
7/9/1998	6.00	1250	0.63	28	11.00	7.00	0.27	0.01	3
3/3/2000	1.00	847	0.40	6	10.00	8.00	<0.05	<0.05	<2
3/3/2000	1.00	1145	0.40	6	12.00	8.00	<0.05	<0.05	<2
3/3/2000	2.00	840	0.02	6	8.00	7.00	0.28	<0.05	<2
3/3/2000	2.00	1150		6	11.00	7.00	0.23	0.38	2
3/3/2000	3.00	810	0.45	6	10.00	8.00	0.10	<0.05	<2
3/3/2000	3.00	1205		6	13.00	8.00	0.07	<0.05	<2
3/3/2000	4.00	750		7	9.00	8.00	0.07	<0.05	<2
3/3/2000	4.00	1215		7	11.00	8.00	0.07	<0.05	<2
3/3/2000	5.00	730	0.30	6	10.00	8.00	0.09	<0.05	<2
3/3/2000	5.00	1230		7	14.00	9.00	0.08	<0.05	<2
3/3/2000	6.00	710		7	10.00	7.00	0.56	<0.05	2
3/3/2000	6.00	1235		7	12.00	8.00	0.49	<0.05	2